PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A46B 9/04 — A1

(11) International Publication Number: **WO 99/60886**

(43) International Publication Date: 2 December 1999 (02.12.99)

(21) International Application Number: PCT/SK99/00006

(22) International Filing Date: 20 May 1999 (20.05.99)

(30) Priority Data:
PV 702–98 22 May 1998 (22.05.98) SK

(71)(72) Applicant and Inventor: ĎURANA, Ivan [SK/SK]; Topoľčianska 10, 851 01 Bratislava (SK).

(74) Agent: GUNIŠ, Jaroslav; Animus – Patent and Trademark Office, Dúbravská cesta 9, 842 34 Bratislava (SK).

(81) Designated States: AT, AU, BR, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HR, HU, JP, KR, NO, PL, PT, RO, RU, SE, SI, UA, US, YU, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
In English translation (filed in Slovak).

(54) Title: TOOTHBRUSH

(57) Abstract

The toothbrush according to this invention consists of the handle (1), at least one neck (2) and at least one head (3) with bristles (4), with at least one polishing block (5) connected to the head (3). The polishing block (5) is made from an elastic material and can contain abrasive particles. Surface of the polishing block (5) can be shaped, for example into wave–like shape. The polishing block (5) can contain antibacterial substances. The polishing block (5) can be made from physically not harmful, edible and gradually soluble material.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

TOOTH BRUSH

Technical Field

The invention is related to tooth brushes resolving their new constructional and functional conception.

Background Art

Mouth cleaning is one of the most frequent acts of personal hygiene. In spite of the fact that there are several different requisites for mouth cleaning, such as dental floss, rinsing equipment with concentrated stream of water or other liquids, the tooth brush has still retained its dominant position.

There are dozens of variations of concrete technical designs of the tooth brush which should make mouth cleaning more effective.

The aim of various tooth brush construction designs is to achieve perfect and quick tooth cleaning and also to ensure gum massage. It is important that it does not damage gum, mouth or teeth .

The principal construction designs, by means of which the aforementioned effects should be accomplished, are based mainly on the form and elasticity of handle, shape, material, location, length and thickness of bristles.

Tooth brushes with narrow and suitably shaped neck between handle and tooth brush head belong to designs with better effects. There are also designs in which the handle is in the neck area connected to the head by a joint (e.g. Japanese patent application No. 010 546 41) .

There exists also a tooth brush design (the Japanese patent application No. 010 999 66) that has in the handle a longitudinal hole for tooth paste. This hole passes into the head of the tooth brush where it leads into the openings in places where bristles are fixed into the tooth brush head. Such a tooth brush ensures the necessary supply of tooth paste during the tooth cleaning as well.

Apart from the function of a usual handle or storage of paste, there are handle holes with space for batteries, a little engine, or other electric or electronic equipment ensuring movement of bristles or other effects on teeth, gum or other parts of mouth.

The next category of tooth brushes consists of brushes with multiple heads.

This construction design contains the tooth brush, which is designed so that the handle passes to the neck, which is divided into two heads, placed next to each other. Bristles from both heads are orientated in the same direction. Regarding the elasticity of tooth head material, bristles can better adapt to the shape of teeth.

Brushes with multiple heads are designed in another way too. The essence is that the tooth brush has two heads, placed next to each other, in which bristles are placed so that they are orientated mutually opposite. Such a tooth brush enables to clean both outside and inside surface of teeth simultaneously.

The invention of the cleaning brush according to the invention registration of the Slovak Republic No. 77 – 94 is of similar design. The cleaning tooth brush consists of a handle and longitudinal rows of cleaning bristles which are orientated in the direction of the tooth brush longitudinal axis. The handle has longitudinal grooves, depth of which is usually equal to thickness of the handle and the length is bigger than the length of the longitudinal rows of cleaning bristles. The stiffness of diffraction of individual parts of the handle divided by the longitudinal grooves is not constant and is smaller than stiffness of diffraction of the other parts of the handle.

The construction design according to the Japanese invention registration No. 020 889 16 is also very interesting; basically, it is a connection of two tooth brushes, placed next to each other and connected. The connection is gained by means of elastic coupling , fixed in the tooth brush handles. Thanks to elasticity of used materials, such a connection ensures better adaptation of position of tooth brush heads to the shape of teeth. This tooth brush enables cleaning of both upper and lower teeth.

There is also a tooth brush, with the head orientated vertically at handle .

Another invention of tooth brush (Japanese patent application No. 020 897 46), essence of which is that there are bristles fixed in the block of head so that they protrude on both sides of the head. Bristles on one side of head can be different to those on the other head and in material, length or thickness.

There exist also tooth brushes produced from one piece of elastic material. Their essence is such, that there are openings in the tooth brush head for inserting the finger and bristles produced from the same material as the body of the tooth brush, protrude

from the outside surface of tooth brush. Such tooth brushes have an advantage especially in the higher sensitiveness in cleaning teeth and by their untraditional construction design, they are more attractive for children.

In spite of the amount of tooth brush inventions, the problem of perfect mouth cleaning remains unresolved. Each of the chosen typical representatives of the tooth brush construction design has also disadvantages.

Main disadvantages include production demands, complexity of usage as well as limited ability to sufficiently remove remaining pieces of food while simultaneously polishing tooth enamel.

Disclosure of the Invention

The above mentioned disadvantages are to great extent removed by the following tooth brush construction design invention.

Its essence is such, that the tooth brush constructed from a handle, at least one neck and at least on head with bristles has at least one polishing block connected to the head.

The polishing block can be from an elastic material containing abrasive particles.

Surface of the polishing block can be shaped for example into wave-like or other shape.

The polishing block can also contain antibacterial substances.

The polishing block from physically not harmful, edible and gradually soluble material could be advantageous.

The polishing block can consist of several parts with various material characteristics.

The tooth brush according to this invention can be also constructed so, that the polishing block is connected to the reverse side of the head, which block is suitable for mouth massage or is soluble and contains antibacterial substances.

Main advantages of the tooth brush according to this invention include the improved ability of perfect mouth cleaning a simultaneously better polishing of tooth enamel. Another possibility is the antibacterial effect even without tooth paste.

Brief Description of Drawings

Actual tooth brush construction designs according to this invention are shown on attached figures.

Fig. 1 shows basic construction design of the tooth brush with the polishing block.

Fig. 2 shows the tooth brush with the polishing block with abrasive particles, surface of which is undulated.

Fig. 3 shows the tooth brush according to this invention with the polishing block on the reverse side of the head.

Best Mode for Carrying Out the Invention

Example 1

The tooth brush consists of handle 1, neck 2 and head 3 with bristles 4, with the polishing block 5 connected to the head 3 so, that bristles 4 go through it.

Example 2

The tooth brush consists of handle 1, one neck 2 and one head 3 with bristles 4 with the polishing block 5 connected to the head 3. The polishing block 5 of this construction design is from an elastic material that contains abrasive particles.

Surface of the polishing block 5 is undulated.

Example 3

The tooth brush consists of handle 1, neck 2 and head 3 with bristles 4, with the polishing block 5 connected to the head 3 so that bristles go through it.

Another polishing block 5 is connected to the reverse side of the head 3. This polishing block 5 contains physically not harmful, edible and gradually soluble material also containing antibacterial substances.

Industrial Applicability

The invention is utilisable mainly in manufacture of tooth brushes with improved cleaning and polishing effects.

Patent Claims

1. The tooth brush constructed from the handle, at least one neck and at least one head with bristles, characterised in that at least one polishing block (5) connected to the head (3).
2. The tooth brush as claimed in Claim 1, characterised in that the polishing block (5) made from an elastic material containing abrasive particles.
3. The tooth brush as claimed in Claim 1, characterised in that the surface of the polishing block (5) is shaped, for example into wave-like shape.
4. The tooth brush as claimed in Claims 1 or 2, characterised in that the polishing block (5) containing antibacterial substances.
5. The tooth brush as claimed in Claim 4, characterised in that the polishing block made from physically not harmful, edible and gradually soluble material.

Fig. 1

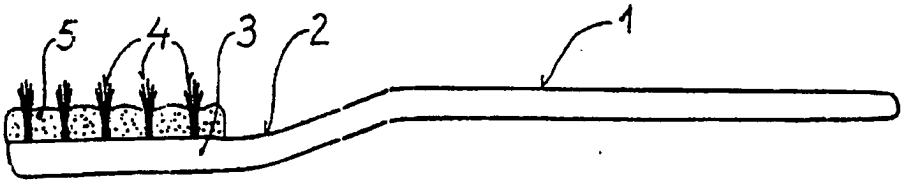

Fig. 2

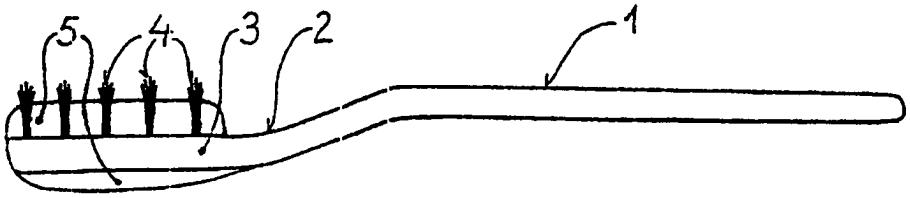

Fig. 3

INTERNATIONAL SEARCH REPORT

Interna al Application No
PCT/SK 99/00006

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A46B9/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 18364 A (PROCTER & GAMBLE CO) 7 May 1998 (1998-05-07) page 2, paragraph 6 - page 3, paragraph 1; figures	1-5
X	US 2 702 914 A (KITTLE) 1 March 1955 (1955-03-01)	1-3
Y	column 2, line 27 - column 4, line 4; figures	4,5
Y	US 5 141 290 A (MAIRON) 25 August 1992 (1992-08-25) the whole document	4,5
X	US 5 735 011 A (ASHER) 7 April 1998 (1998-04-07) column 2, line 51 - column 3, line 42; figures	1-3

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 July 1999	02/08/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Triantaphillou, P

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Intern nal Application No
PCT/SK 99/00006

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 604 951 A (SHIPP) 25 February 1997 (1997-02-25) column 3, line 39 - column 5, line 17; figures	1,3
X	US 2 819 482 A (APPLEGATE) 14 January 1958 (1958-01-14) column 1, line 39 - column 4, line 10; figures	1,3
X	FR 2 636 818 A (TISSINARI) 30 March 1990 (1990-03-30) page 1, line 1 - line 39; figures	1,2

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. al Application No
PCT/SK 99/00006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9818364 A	07-05-1998	NONE	
US 2702914 A	01-03-1955	NONE	
US 5141290 A	25-08-1992	NONE	
US 5735011 A	07-04-1998	AU 5427698 A WO 9822000 A	10-06-1998 28-05-1998
US 5604951 A	25-02-1997	AU 4423996 A WO 9620654 A	24-07-1996 11-07-1996
US 2819482 A	14-01-1958	NONE	
FR 2636818 A	30-03-1990	NONE	